REMARKS

Applicants note that the prior rejections based on the Pourahmadi et al. reference has been withdrawn. The August 9, 2011 Office action contains the first rejections based on Childers et al. and Glezer et al.

Reconsideration is respectfully requested of the rejection of claims 30-51 and 59-61 as obvious in view of Childers et al. (US2004/0086872) and Glezer et al. (2004/0189311).

Claim 30 is directed to a lab-on-a-chip diagnostic system for sample preparation of a fluid sample containing cells and/or particles. The system has these express requirements:

> 1) There is a mandatory valve controlling flow of liquid between the reservoir for lysis fluid and the lysis unit;
>
> 2) There is a mandatory valve controlling flow of liquid between the reservoir for eluent and the nucleic acid extraction unit;
>
> 3) The system is driven by a single pump or syringe; and
>
> 4) All the components are formed on a common substrate.

This combination of express requirements results in a simplified fluid actuation system, thus making the manufacture and operation of such devices more straight forward than prior art devices.

The Office action notes that the Childers et al. reference fails to teach a system wherein activation of all liquids is achieved with a single pump or syringe, and relies on Glezer et al. to bridge this gap:

> ...it would have been well within the purview of one having ordinary skill in the art to employ the pump system suggested by the reference of Glezer et al. for controlling the fluid movement within the cartridge device of the primary reference Childers et al. for the known and expected result of providing an art recognized means for controlling the fluid movement within an assay cartridge which is required of the system of the primary reference of Glezer et al.

Applicants respectfully submit that one skilled in the art would not have been inclined to modify the Childers et al. system as proposed. The Glezer et al. system which has a single pump is illustrated in Fig. 23, and requires a sophisticated external manifold 2340 having a complex of five valves 2342:

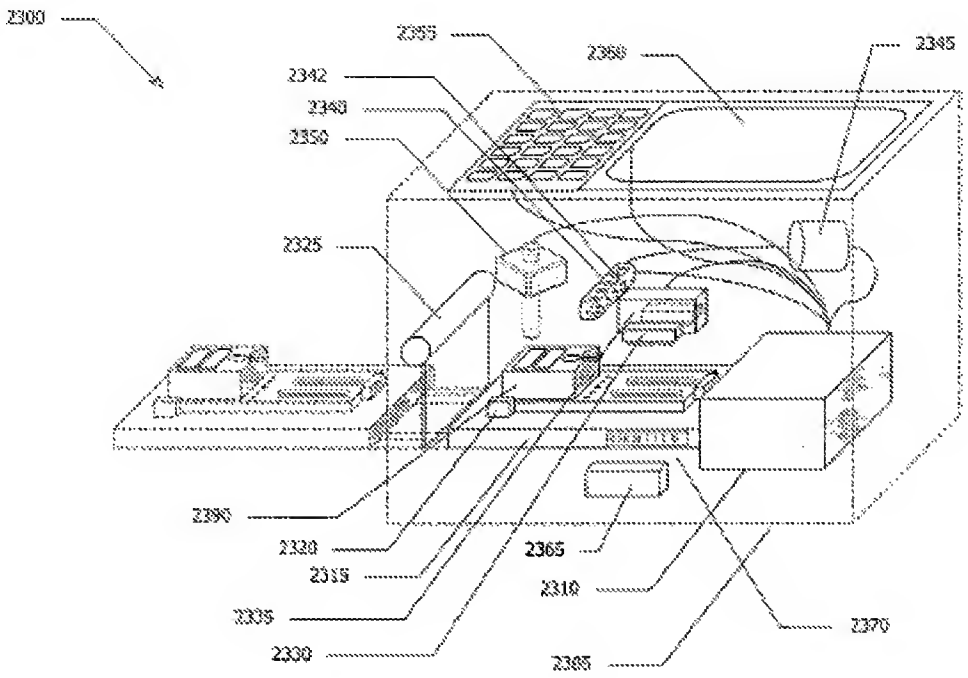

Fig. 23

Glezer et al. explain in paragraph 0256:

> Selective application of pressure to the cartridge's fluidic components is preferably achieved by incorporating a fluid manifold 2340 housed within the cartridge reader to simplify and enhance the fluidic engagement function and to minimize the number and complexity of fluidic systems. Advantageously, the fluidic manifold 2340 can be adapted and configured to facilitate the use of a single pump; i.e., control valves 2342 can be incorporated within the fluidic manifold 2340 to selectively control fluid movement within and through the various fluidic components of the cartridge.

Accordingly, to modify the Childers et al. system to incorporate Glezer et al.'s single pump system would require using Glezer et al.'s complex external valving

system, as Glezer et al. contemplates no alternative. One skilled in the art would therefore have no reason to do so, and in fact would be led away from this modification, since the resulting lab-on-a-chip diagnostic system would in fact be unnecessarily more complicated than Childers et al.'s system.

In contrast to the proposed modified Childers et al. system, applicants achieve their much simpler device containing only a single pump with no external valve complex. Applicants' system uses the arrangement recited in claim 30 including a "reservoir containing the lysis fluid ... in fluid communication with the lysis unit, and ... a valve to control the flow of fluid therebetween"; and "reservoir containing the eluent ... in fluid communication with the nucleic acid extraction unit, and ... a valve to control the flow of fluid therebetween ...." And the components *are all formed on a common substrate*, as expressly required by claim 30. There is no suggestion by either Childers et al. or Glezer et al. as to how such a system could be achieved, because plucking the single pump concept from Glezer et al.'s system necessitates using their complex external valving system.

Claim 30 is therefore respectfully submitted to be patentable because one skilled in the art would have had no reason to make the proposed combination. Moreover, even if one were to make the proposed combination, it would not lead to applicants' device because the valves between the reservoirs and the processing units are contemplated by Glezer et al. as strictly external of the substrate.

Claim 31-51 and 59-61 depend directly or indirectly from claim 30, and are therefore respectfully submitted to be patentable for the same reasons, and in view of their additional requirements.

CONCLUSION

In view of the foregoing, applicants respectfully request issuance of a Notice of Allowability for all pending claims.

Respectfully submitted,

/paul fleischut/

Paul Fleischut, Reg. No. 35,513
SENNIGER POWERS LLP
100 N. Broadway
17th Floor
St. Louis, Missouri 63102
(314) 345-7000